

Dept. of Chemistry and Biochemistry
Organic/Inorganic Seminar Series

Emily L. Que

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Friday, November 16, 2018

2:30–3:30 pm, 331 KLA

Coffee reception @ 2:00 pm, 377 KLA



Hosted by Michael Pluth

***Harnessing the power of paramagnetic metals
for ^{19}F magnetic resonance biosensing***

Abstract: ^{19}F Magnetic resonance imaging (MRI) is an emerging technique for *in vivo* imaging, showing great promise due to the favorable NMR properties of the fluorine nucleus (high sensitivity, large ppm range) and the lack of detectable fluorine signal in biological systems. In the Que lab, we exploit the ability of paramagnetic metals (including Cu^{2+} , Co^{2+} , high spin Fe^{3+} , octahedral Ni^{2+} , and various lanthanides) to induce changes in relaxation and chemical shift properties of nearby fluorines to make biosensor platforms for *in vivo* ^{19}F MRI diagnostics. We are exploring small molecule imaging agents that undergo changes in spin state in response to changes in environment (redox, pH, etc.) and aim to use these agents for visualizing hypoxia, oxidative stress, and acidic environments *in vivo*. Further, we have recently begun work on fluorine-rich nanoparticle agents that can be used for tracking specific cell types and are using these to visualize immune cell therapy and cancer biomarkers *in vivo*.